

CLAIMS

What is claimed is:

1. A rotary switch assembly comprising:
 - a rotatable member comprising a cam;
 - a retainer coupled to the rotatable member;
 - a bearing housed in the retainer;
 - a pad comprising a resilient button, the button having an electrically conductive portion;
 - a base; and
 - a printed circuit board retained in the base and having an electrical conductor, such that upon rotation of the rotatable member, the cam selectively forces the bearing to compress the button and close a circuit by bringing the conductive portion into electrical contact with the conductor.
2. The switch assembly of claim 1, wherein the pad and the base provide an enclosure shielded from an ambient environment.
3. The switch assembly of claim 1, further comprising a housing connected to the base and having an opening through which a top portion of the rotatable member extends.

4. The switch assembly of claim 1, wherein the retainer includes a cylindrical aperture at least partially receiving the bearing and the button.
5. The switch assembly of claim 4, wherein the bearing moves relative to the aperture in a first direction when the button is compressed and in a second direction when the button is released.
6. The switch assembly of claim 5, wherein the pad includes a track for guiding the cam toward and away from the aperture.
7. The switch assembly of claim 6, wherein the circuit opens when the cam moves away from the aperture and releases the button.
8. The assembly of claim 7, wherein the button provides tactile feedback through the rotatable member when the circuit closes and opens.

9. A switch assembly for actuating a plurality of electrical circuits, the assembly comprising:

a rotatable member comprising a cam;

a retainer coupled to the rotatable member and housing a plurality of bearings;

a pad including a plurality of resilient buttons, each button having a conductive portion and a surface that is in contact with a corresponding bearing;

a base supporting the pad; and

a printed circuit board retained in the base and having a plurality of electrical conductors, such that upon rotation of the rotatable member, the cam selectively forces one of the bearings to compress the corresponding button and close one of the circuits by bringing the conductive portion of the button in electrical contact with the corresponding conductor.

10. The assembly of claim 9, wherein at least one of the electrical conductors is redundant.

11. The assembly of claim 9, wherein at least one of the buttons is redundant.

12. The assembly of claim 9, wherein the circuits are closed in a predetermined sequence.

13. A multi-position switch assembly comprising:

- a rotatable member having a cam;
- a bearing retainer having a plurality of apertures;
- a plurality of bearings, each bearing received in a corresponding aperture and being in contact with a corresponding resilient button, the button being supported on a printed circuit board, wherein upon rotation of the member, the cam selectively compresses one of the bearings to cause the corresponding button to close a circuit.

14. The switch assembly of claim 13, wherein one of the buttons is redundant.

15. A multi-position switch assembly mounted on a base, the switch comprising:

a member rotatable relative to the base;

a printed circuit board received in the base;

a plurality of first electrical conductors rotatable with the member, wherein the first electrical conductors are biased toward a guiding slot on the printed circuit board; and

a plurality of pairs of second electrical conductors disposed on opposing sides of the slot, such that upon rotation of the member, at least one of the first conductors contacts one of the pairs of the second conductors and closes a circuit of the switch assembly.

16. The multi-position switch assembly of claim 15, wherein each of the first electrical conductors has an end portion shaped to be received in the guiding slot.

17. The multi-position switch assembly of claim 16, wherein each of the first electrical conductors is tubular.

18. The multi-position switch assembly of claim 17, wherein the end portion is hemispherical.

19. The multi-position switch assembly of claim 17, wherein each of the first electrical conductors is received in a retaining portion of the rotatable member.

20. The multi-position switch assembly of claim 19, further including a plurality of springs, wherein each spring is received in one of the retaining portions and the corresponding electrical conductor.

21. The multi-position switch assembly of claim 15, wherein one of the first electrical conductors is redundant.

22. The multi-position switch assembly of claim 15, further comprising a housing attached to the base and having an opening through which the member extends.

23. The multi-position switch assembly of claim 15, wherein one of the second electrical conductors is redundant.

24. A multi-position switch assembly mounted on a base, the switch assembly comprising:

a member rotatable relative to the base, the member including a plurality of retaining portions;

a plurality of first electrical conductors, each first electrical conductor having a tubular portion and an end portion, wherein each of the tubular portions is received in one of the retaining portions of the member;

a plurality of springs received in the retaining portions of the member and the tubular portions of the corresponding first electrical conductors;

a printed circuit board supported on the base and including a guiding slot sized to receive the end portions of the first electrical conductors; and

a plurality of pairs of second electrical conductors disposed on opposing sides of the guiding slot, such that upon rotation of the member, at least one of the end portions contacts each of the second conductors of one pair and closes a circuit of the switch assembly.